California Monthly Climate Summary
September 2013

Weather Highlights

September 2013 was a wet, average temperature month for California. According to the Western Region Climate Center's California Climate Tracker, the monthly average temperature was 67.2°F which is 0.1°F higher than the long-term average of 67.1°F. With a statewide average of 0.69 inches, precipitation in September was 144% of average. This is the driest January to September on record with a total of 5.51 inches of precipitation. The mean for this period is 14.95 inches. The previous record low was in 1924 when 6.26 inches was recorded. Regional maximum and minimum temperature and precipitation plots for September and for the January through September time period are shown at the end of the document.

September began with mountain showers and thunderstorms in the southeast deserts. Temperatures were cooler in the north with warming through the week while developing onshore flow in the south cooled warmer than average temperatures. Week two was near normal until a changing pattern brought more mountain showers and wind. High pressure dominated the state at the start of the third week. A low pressure system moved through the north and central part of the state during the week bringing rain and thunderstorms to many locations. Snow was even recorded at some of the higher elevations. None of the precipitation made it to southern California. The month closed out with a fall-like pattern of cooler weather in the north and Santa Ana winds in the south.

Preliminary records, reported on the National Weather Service Record Event Report, show that statewide there were 56 temperature records tied or broken and 15 precipitation records set for the month. Of the 56 temperature records set, 6 were for new high maximum temperatures and 35 were for new high minimum temperatures. Records were set over 21 days of the month. For the water year, 987 temperature records were set and 96 precipitation records were set. Indio tied a daily high minimum temperature on September 16th with a reading of 83°F which was last reached in 2003. On the 17th, Indio set a new daily high minimum temperature record with an 86°F reading. The old record was 82°F set back in 1935. On September 21st San Rafael Civic Center and the San Jose Airport recorded new precipitation records with readings of 0.57 inches and 0.66 inches respectively. No precipitation had been previously recorded on this date.

For the California Data Exchange Center's (CDEC) network of temperature gages used in this report, 106 stations recorded a minimum temperature below freezing during the month while 64 stations reached or exceeded 100°F at least once during the month. Statewide extremes from the CDEC network of temperature gages are shown below. Also shown are the monthly average extremes from the CIMIS network. A table of regional average minimum, mean, and maximum temperatures from the CDEC stations is also shown at the end of the summary.

Precipitation in September was wet in several places. For the CDEC precipitation gages, the largest amount of precipitation recorded for the month was at Gasquet Ranger Station in the North Coast region with 9.96 inches. This is 541% of the average precipitation for this station for the month. At the other end of the spectrum, 16 stations recorded no precipitation for the month. For the CIMIS network, Kesterson in Merced County topped the precipitation charts with 2.65 inches for the month and 67 stations recorded no precipitation. Some CIMIS gages may show large precipitation totals if the gages are not covered during irrigation activities so care should be given to review precipitation data used from this network.

The 8-Station Index for northern California precipitation recorded 1.8 inches in September. On average, 0.5 inches of precipitation is recorded for the month. More precipitation fell in September than it did in January or February. For the combined January to September total, the 8-Station Index is 13.13 inches which is the second lowest Jan-Sep total in the period of record which dates back to water year 1921. The lowest value was 11.72 inches set in 1924. Statewide, the average precipitation for the month was 227% of the long-term average based on the California Data Exchange Center (CDEC) gages. Precipitation percentages by region from the CDEC gages are shown in a table at the end of this document.

CoCoRaHS Update

September 2013 completes California's fifth year with CoCoRaHS – the Community Collaborative Rain, Hail and Snow Network. This group uses citizen volunteers to record rain, hail and snow data. The users enter the data online at the CoCoRaHS web site. The web site provides the opportunity to see spatial detail of rain and snow patterns. A map from September 22, 2013 is shown at the end of the document. As of the end of September, California has 1052 volunteers signed up spanning 53 of California's 58 counties. The counties without volunteers are Alpine, Colusa, Glenn, Modoc, and Tuolumne. The county with the most volunteers at the end of September is Sonoma with 98 volunteers. San Diego County is close behind with 94 volunteers. For the month of September, 9,379 reports were recorded for California. For the water year there were over 140,000 observations made. The largest daily rain total for CoCoRaHS- CA in September was in Del Norte County where 3.58 inches was recorded on 9/30/2013. There were three snowfall reports recorded with the largest being 4 inches in Placer County on 9/22/2013. Two hail reports were submitted in September with one from Yolo County on 9/22/2013 and one from Placer County on 9/21/2013. The largest stone size was pea sized. To join CoCoRaHS or find more information, please visit http://www.cocorahs.org.

Snowpack and Water Supply Conditions

The Water Supply Index (WSI) for WY2013 for the Sacramento Basin fell into the dry category and the San Joaquin fell into the critical category. Further information can be found at http://cdec.water.ca.gov/water_supply.html. A historical listing of water year

categories for both basins can be found at http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

Drought Monitor and Seasonal Outlook

The maps for California for August 27, 2013 and September 24, 20123 are shown below. Note the redesign of the image depiction as part of the re-working of the National Drought Mitigation Center's (NDMC)website. The Drought Monitor maps can be found on the NDMC website http://drought.unl.edu/dm/. These maps are largely a reflection of precipitation and soil moisture deficit estimates. As of the September 24th depiction, 11.36% of California is depicted in D3 or extreme drought, 78.48% of California is depicted in the D2 or severe drought category, 6.2% of California is depicted in the D1 or moderate drought category. An additional 1.33% of the state is depicted as D0 or abnormally dry and 2.63% of the state is drought free. Maps are updated weekly.

The U.S. Seasonal Drought Outlook for October through December from NOAA depicts California in persisting drought throughout the state with some improvement on the North Coast. This forecast is based primarily on climatology and forecast models. Maps and information can be found at http://www.cpc.noaa.gov/products/expert_assessment/seasonal_drought.html. Updates are provided twice per month.

For more information on water conditions in California, visit http://www.water.ca.gov/waterconditions/. A table showing end-of-month reservoir storage by hydrologic region is shown at the end of this document. Statewide, reservoir storage at the end of September was 74% of average. At the end of September 2012, storage was 97% of average.

ENSO Conditions and Long-Range Outlooks

The El Niño/Southern Oscillation (ENSO) is currently in neutral conditions. Equatorial sea surface temperature anomalies for the tropical Pacific have been normal with values of 0.0°C in the Niño 3.4 at the end of September. The July through September 3-month running mean of the Ocean Niño Index (ONI) is -0.3. Five consecutive ONI values need to be below the threshold o f -0.5 for conditions to be classified as a La Niña event (five consecutive values above the 0.5 threshold need to be observed for classification as an El Niño event). Most forecast models have the tropical sea surface remaining near neutral conditions for the rest of the calendar year. More information can be found at the Climate Prediction Center's web site: http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory/ Updates are posted weekly. The latest three month outlook (October through December) from NOAA indicates a higher probability of above normal temperatures for the state. For precipitation, equal chances of above or below normal conditions apply across the state. Outlook plots and discussions can be fount at http://www.wrcc.dri.edu/longrang/. General weather information of interest can be found at http://www.noaawatch.gov/. For anomaly information please see http://www.wrcc.dri.edu/anom/cal_anom.html.

Agricultural Data

September 2013 saw crop harvest progress throughout the state. About one third of the rice crop had been harvested. Alfalfa continued to be cut and baled while winter wheat planting preparations began. Almond harvest continued while pistachio harvest neared completion. Walnut harvest was continuing. Wine grapes began harvest in the Napa Valley and San Joaquin Valley. Raisin grapes that were dried on the vine were collected. Table grape harvest continued. Prune harvest was finished and fig harvest was slowing. Pear harvests neared completion. Kiwifruit, persimmons, and pomegranates continued to develop. Ruby red grapefruit, lemons, and Valencia oranges continued to be harvested. Almond harvest continued while harvest preparations were made for walnuts and pistachios. Summer vegetables, garlic and melons were also harvested across the state. Range conditions deteriorated in the warm weather and were reported to be in fair to very poor condition. Supplemental feeding continued and ranchers have been searching for winter feed. For further crop information see http://www.nass.usda.gov/index.asp.

Other Climate Summaries

California Climate Tracker (new product of Western Region Climate Center)
Golden Gate Weather Service Climate Summary
NOAA Monthly State of the Climate Report

Statewide Extremes (CDEC)

High Temperature – 116°F (Buttercup, Colorado River Desert)
Low Temperature – 9°F (Charlotte Lake, Tulare)
High Precipitation – 9.96 inches (Gasquet Ranger Station, North Coast)
Low Precipitation – 0 inches (16 stations)

Statewide Extremes (CIMIS)

High Average Maximum Temperature – 100.5^0F (Meloland, Imperial County)
Low Average Minimum Temperature – 36.8^0F (Alturas, Modoc County)
High Precipitation – 2.65 inches (Kesterson, Merced County)*
Low Precipitation – 0 inches (67 stations)
*Sometimes irrigation water from sprinklers gets counted as precipitation if the gage is not covered.

Statewide Precipitation Statistics

Hydrologic Region	Region Weight	Basin Reporting			Stations Reporting			% of Historic Average	
		Basins	Sep	Oct-Sep	Stations	Sep	Oct-Sep	Sep	Oct-Sep
North Coast	0.27	5	4	4	17	8	7	395%	92%
SF Bay	0.03	2	2	1	6	2	1	264%	85%
Central Coast	0.06	3	2	2	11	3	2	2.5%	48%
South Coast	0.06	3	3	3	14	11	9	53%	49%
Sacramento River	0.26	5	5	5	41	26	23	309%	89%
San Joaquin River	0.12	6	4	4	24	10	8	140%	76%
Tulare Lake	0.07	5	5	5	28	14	14	21%	61%
North Lahontan	0.04	3	3	3	13	6	5	83%	83%
South Lahontan	0.06	3	2	2	15	2	2	115%	87%
Colorado River	0.03	1	1	1	6	1	1	7.7%	43%
Statewide Weighted Average	1	36	31	30	175	83	72	227%	80%

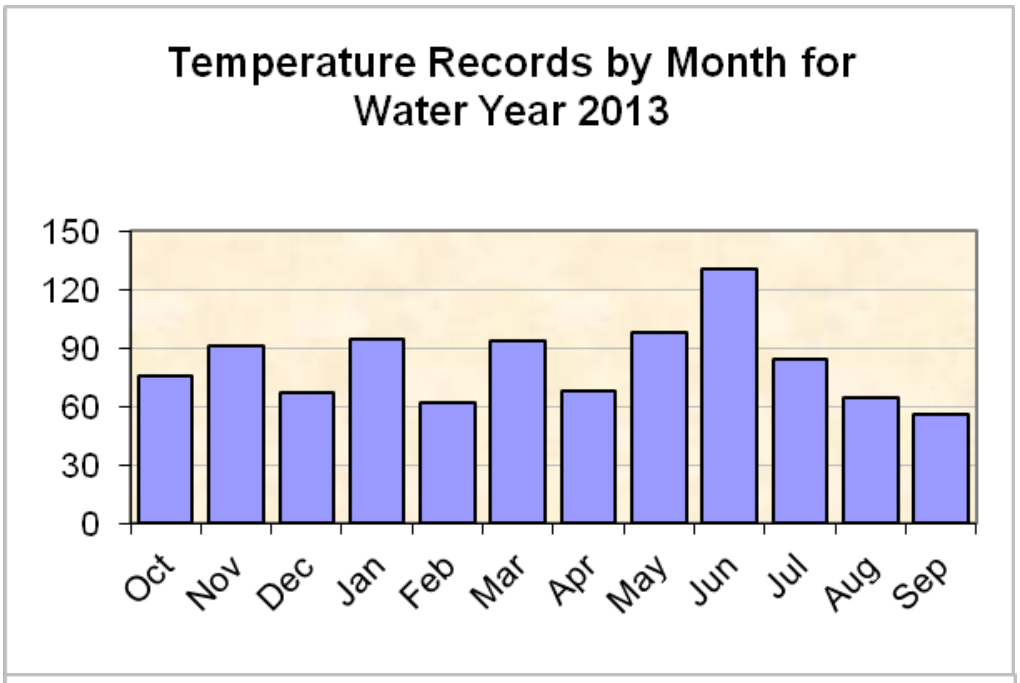
Statewide Mean Temperature Data by Hydrologic Region (degrees F)

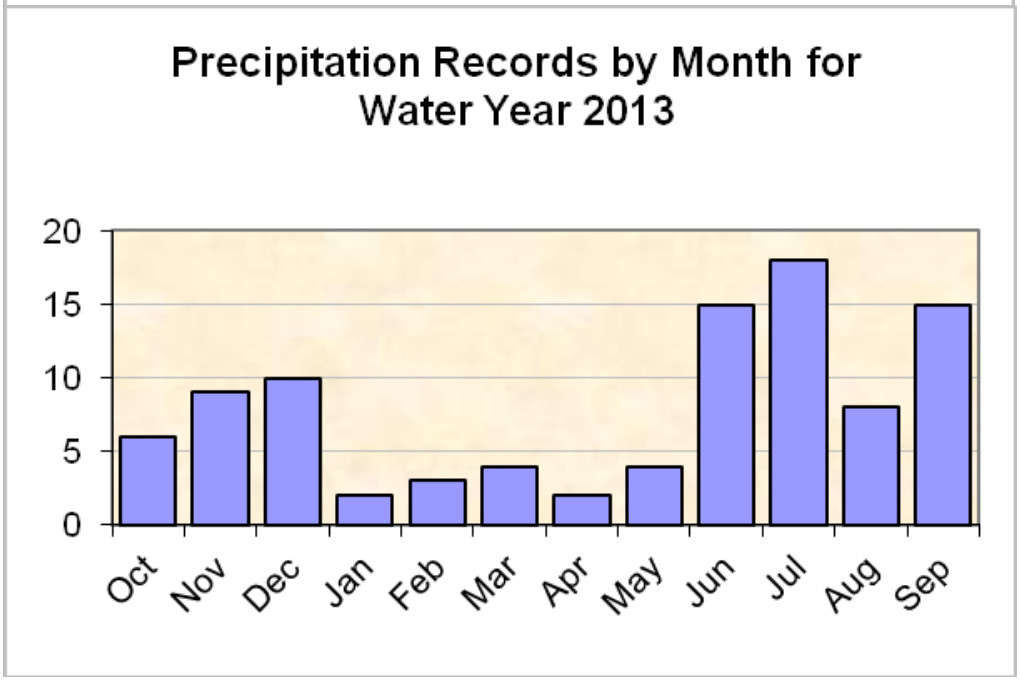
Hydrologic Region	No. Stations	Minimum	Average	Maximum
North Coast	20	35.4	60.2	93.4
SF Bay	10	46.5	64.8	93.2
Central Coast	10	41.6	67.4	94.9
South Coast	38	47.8	72.6	98.6
Sacramento	72	35.7	62.5	92.5
San Joaquin	43	34.6	61.1	86.9
Tulare Lake	18	29.0	57.9	80.4
North Lahontan	26	24.8	52.5	74.7
South Lahontan	15	27.3	58.9	81.5
Colorado River Desert	7	55.6	84.5	108.9
Statewide Weighted Average	259	36.1	62.4	90.9

End-of-Month Reservoir Storage by Hydrologic Region

Storage in Thousand Acre-Feet (taf)

End-of-September Reservoir Storage	Number of Reservoirs	Average Storage (taf)	2013 Storage (taf)	% of Average
North Coast	6	1,988	1,571	79%
San Francisco Bay	17	420	393	94%
Central Coast	6	546	258	47%
South Coast	29	1,326	1,153	87%
Sacramento	43	9,912	7,975	80%
San Joaquin	34	6,399	5,134	80%
Tulare	6	678	333	49%
North Lahontan	5	507	354	70%
South Lahontan	8	279	226	81%
Total	154	22,058	17,400	79%


Temperature Records by Month for
Water Year 2013
150
120
90
60
30
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep


Precipitation Records by Month for
Water Year 2013
20
15
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5
0
Oct
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May
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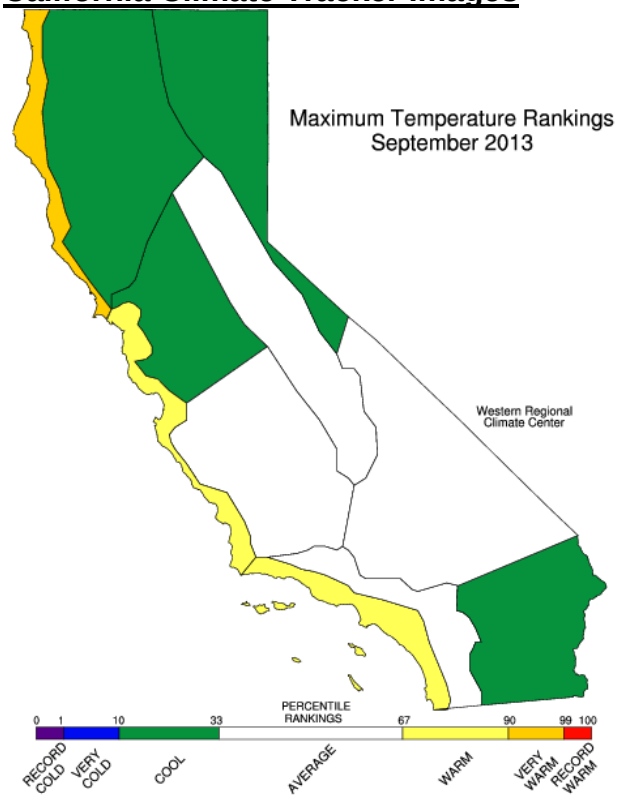
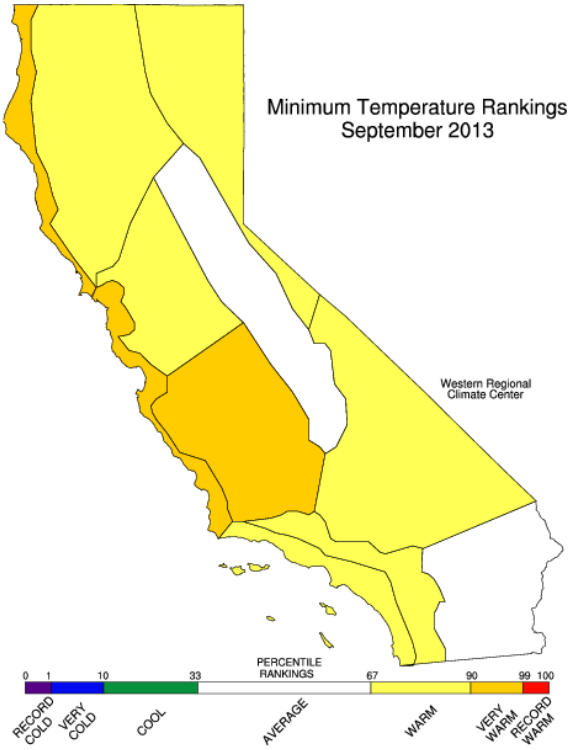
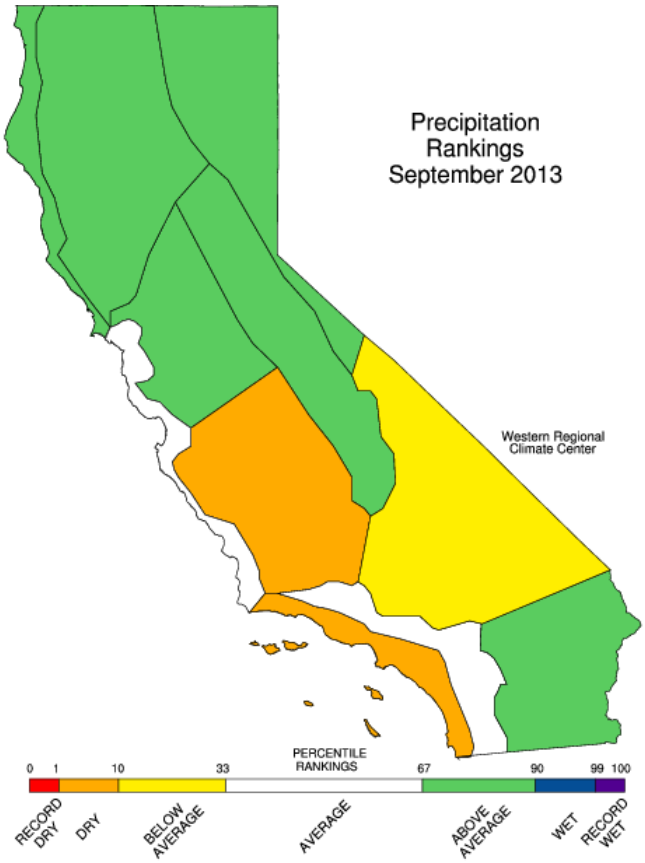
Aug
Sep

California Climate Tracker Images






Precipitation
Rankings
September 2013
Western Regional
Climate Center
PERCENTILE
RANKINGS
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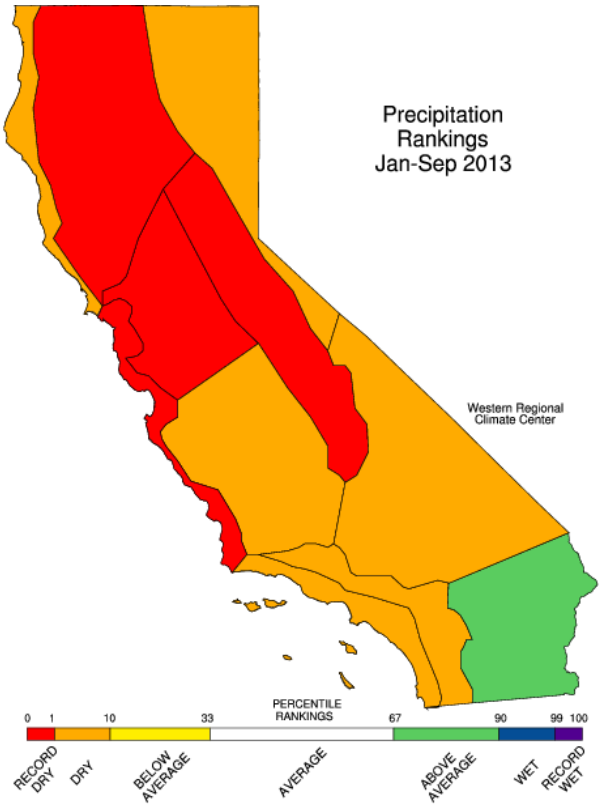
RECORD DRY
DRY
BELOW AVERAGE
AVERAGE
ABOVE AVERAGE
WET
RECORD WET


Precipitation
Rankings
Jan-Sep 2013
Western Regional
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PERCENTILE
RANKINGS
0 1 10 33 67 90 99 100
RECORD DRY
DRY
BELOW AVERAGE
AVERAGE
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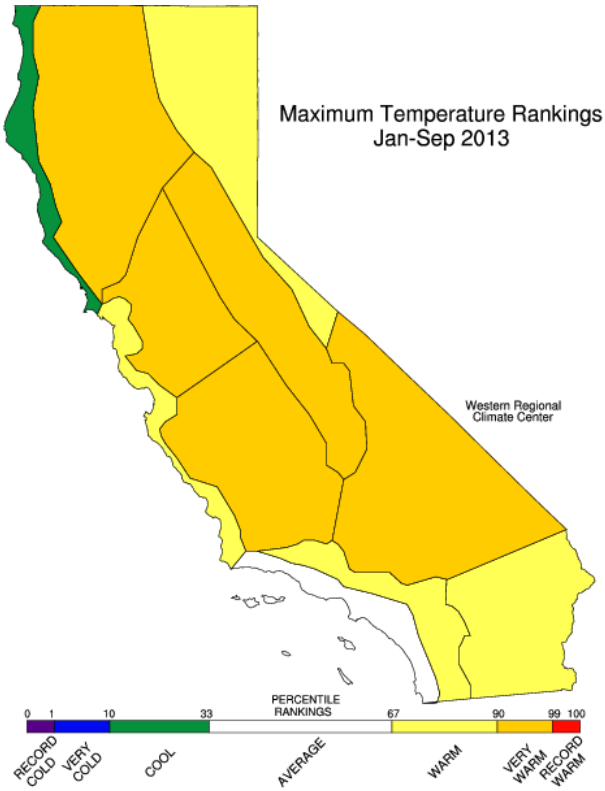
Maximum Temperature Rankings
Jan-Sep 2013
Western Regional
Climate Center
PERCENTILE
RANKINGS
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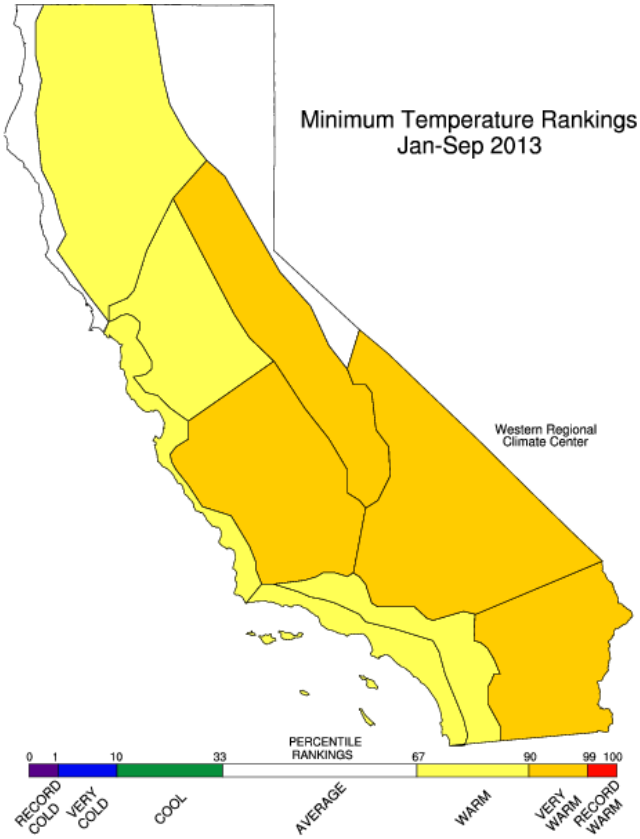
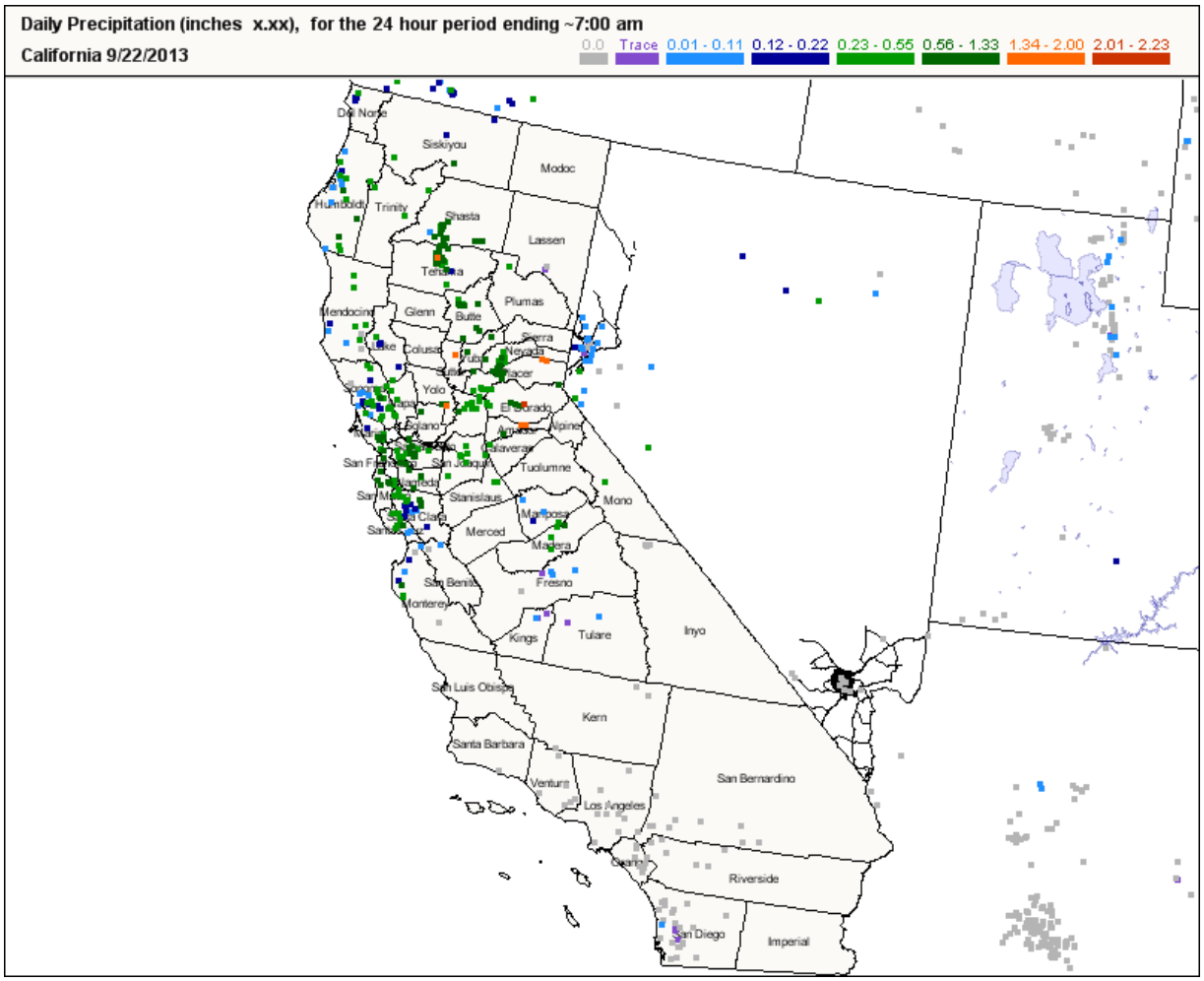
RECORD COLD
VERY COLD
COOL
AVERAGE
WARM
VERY WARM
RECORD WARM


Minimum Temperature Rankings
Jan-Sep 2013
Western Regional
Climate Center
PERCENTILE
RANKINGS
0 1 10 33 67 90 99 100
RECORD COLD
VERY COLD
COOL
AVERAGE
WARM
VERY WARM
RECORD WARM

CoCoRaHS Map



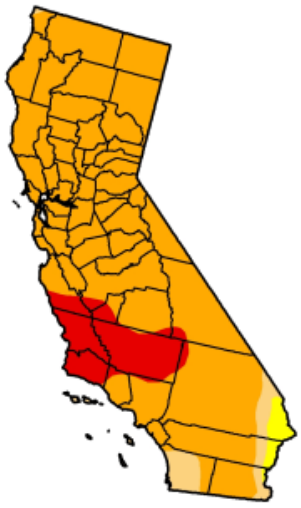
U.S. Drought Monitor

August 27, 2013
Valid 7 a.m. EST

California

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	98.23	93.86	11.36	0.00
Last Week (08/20/2013 map)	0.00	100.00	98.23	93.86	11.36	0.00
3 Months Ago (05/28/2013 map)	0.00	100.00	98.16	46.25	0.00	0.00
Start of Calendar Year (01/01/2013 map)	31.75	68.25	55.32	22.50	0.00	0.00
Start of Water Year (09/25/2012 map)	11.95	88.05	69.41	22.27	1.14	0.00
One Year Ago (08/21/2012 map)	11.30	88.70	69.20	23.30	0.29	0.00



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

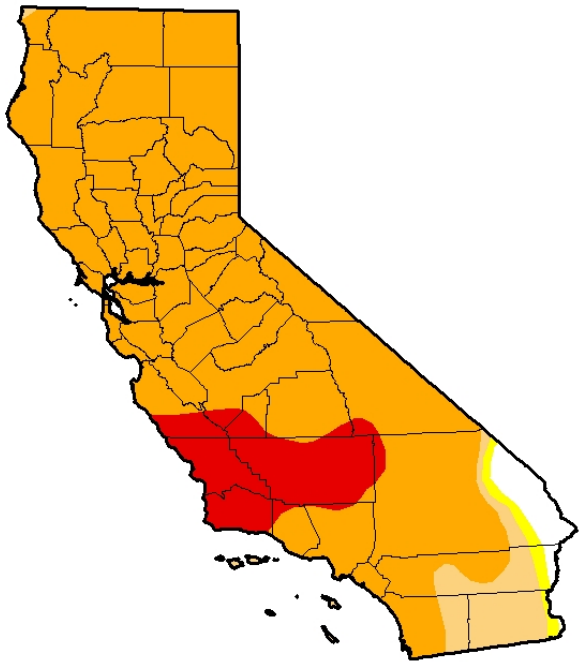
http://droughtmonitor.unl.edu

Released Thursday, August 29, 2013
Anthony Artusa, NOAA/NWS/NCEP/CPC

U.S. Drought Monitor

California

September 24, 2013
(Released Thursday, Sep. 26, 2013)
Valid 7 a.m. EDT



Intensity:

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- D3 Extreme Drought
- D4 Exceptional Drought

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Brad Rippey
U.S. Department of Agriculture

http://droughtmonitor.unl.edu/